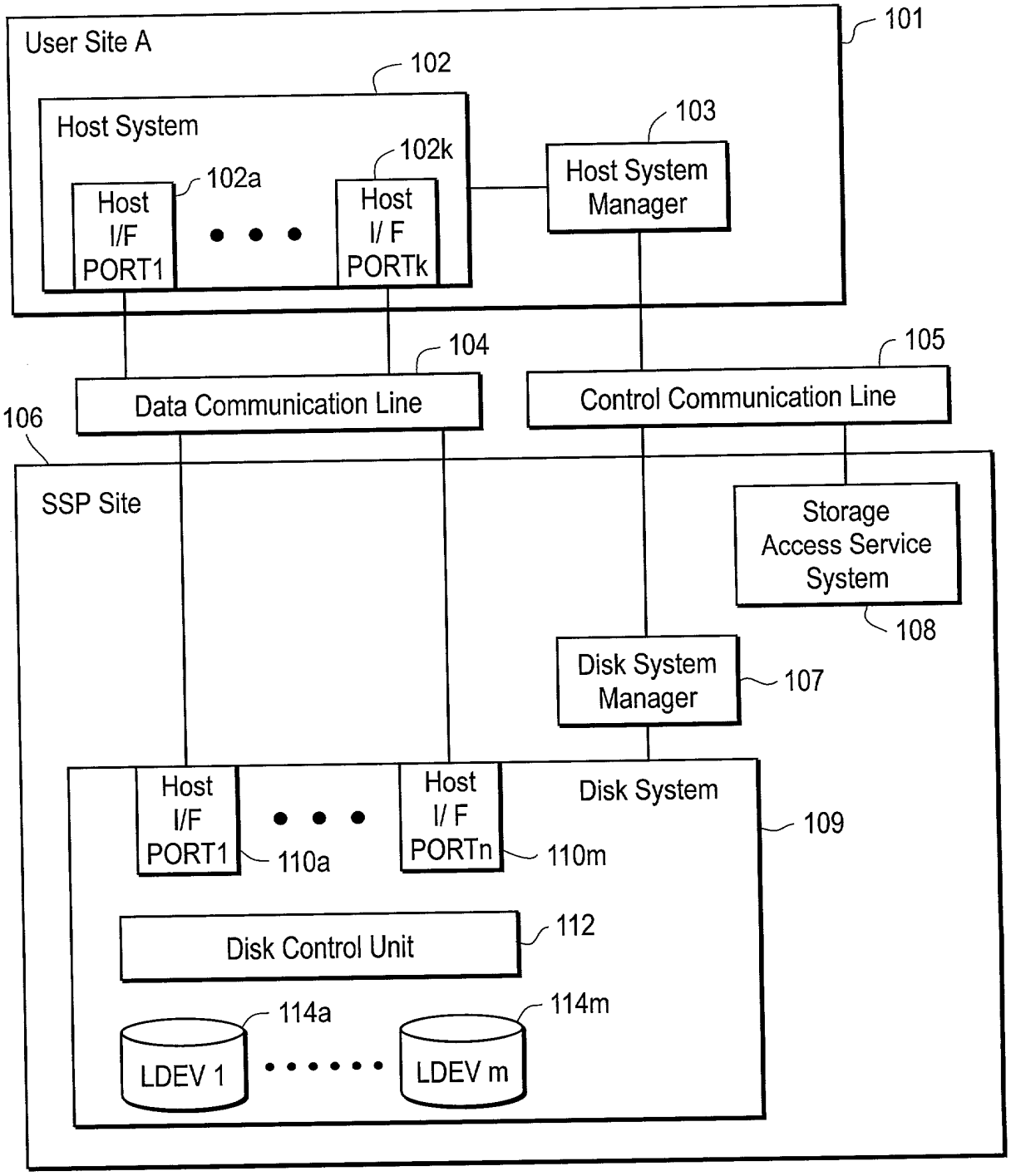


Overall Diagram for Storage Access Service

FIG. 1

200

202 User Site	204 Host Port ID	206 LDEV ID	208 Time Zone	210 Access Schedule
A	Port 1	1	GMT-8	Daily, 8AM-10AM
A	Port 2	2	GMT-8	Saturday, 1AM-5AM
A	Port 3	4	GMT-8	All Day

LDEV Access Schedule Management Table

FIG. 2

300

302 User Site	304 Host Port ID	306 LDEV ID	308 Start Time	310 End Time
A	Port 1	1	01/01/2000 AM08:00	01/01/2000 AM09:45
A	Port 3	4	01/01/2000 AM03:00	01/01/2000 PM03:00
A	Port 3	4	01/02/2000 AM03:00	01/02/2000 PM05:00
A	Port 2	2	01/03/2000 AM01:00	01/03/2000 AM06:00

LDEV Access History Table

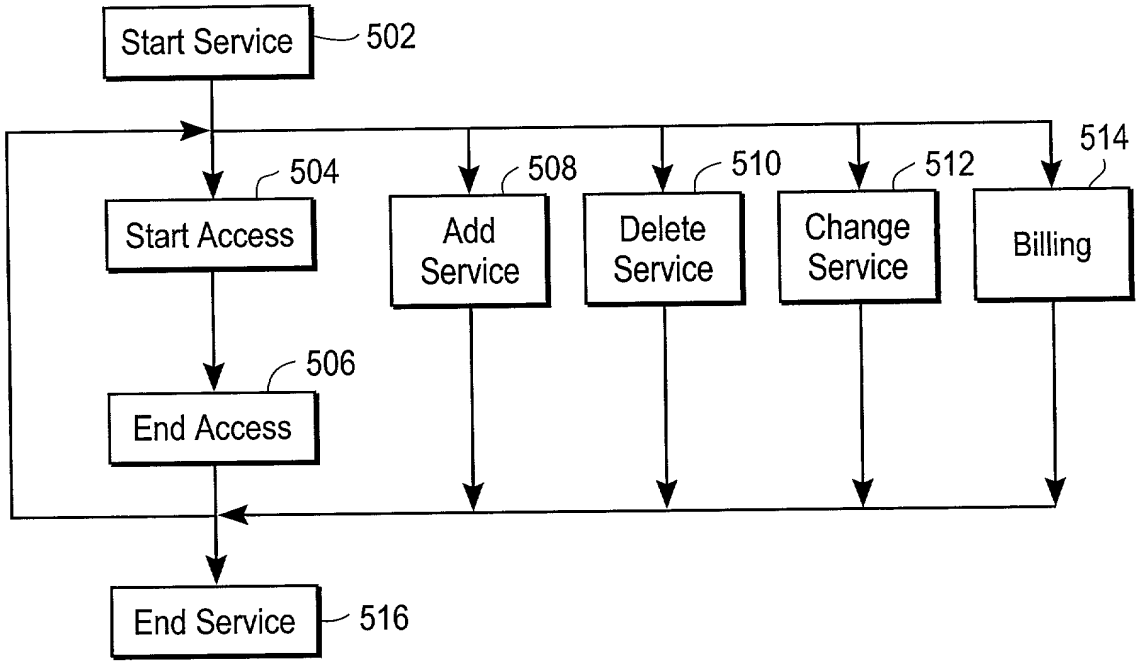
FIG. 3

400

402 Time Zone	404 Time and Price List for Storage Access Service 0 5 6 11 12 17 18 23			
GMT-12	Price D	Price A	Price B	Price C
GMT-11	Price D	Price A	Price B	Price C
GMT	Price A	Price B	Price C	Price D
GMT+11	Price B	Price C	Price D	Price A
GMT+12	Price B	Price C	Price D	Price A

Price List Table

FIG. 4



Storage Access Service Flow

FIG. 5

09814423 - 052501

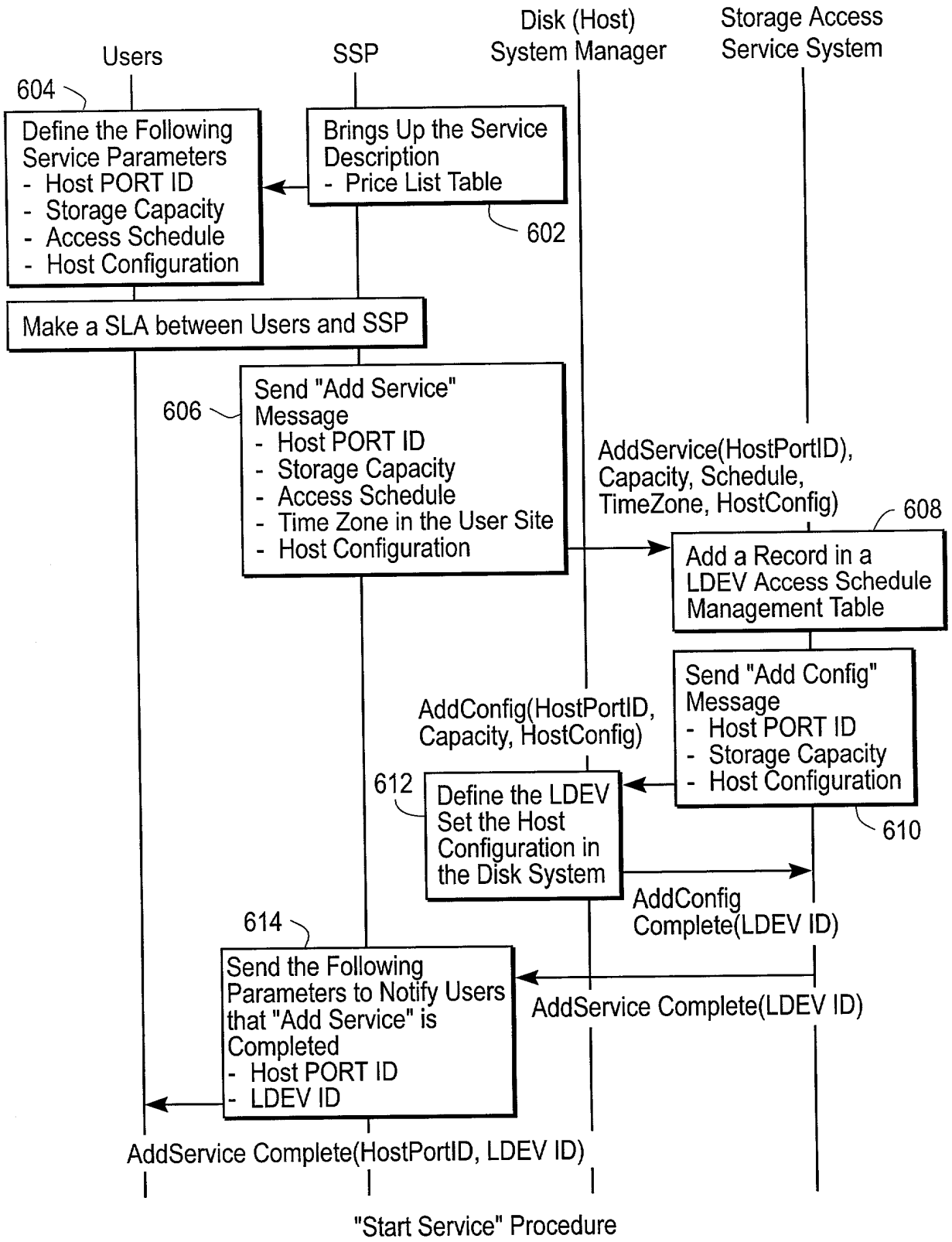
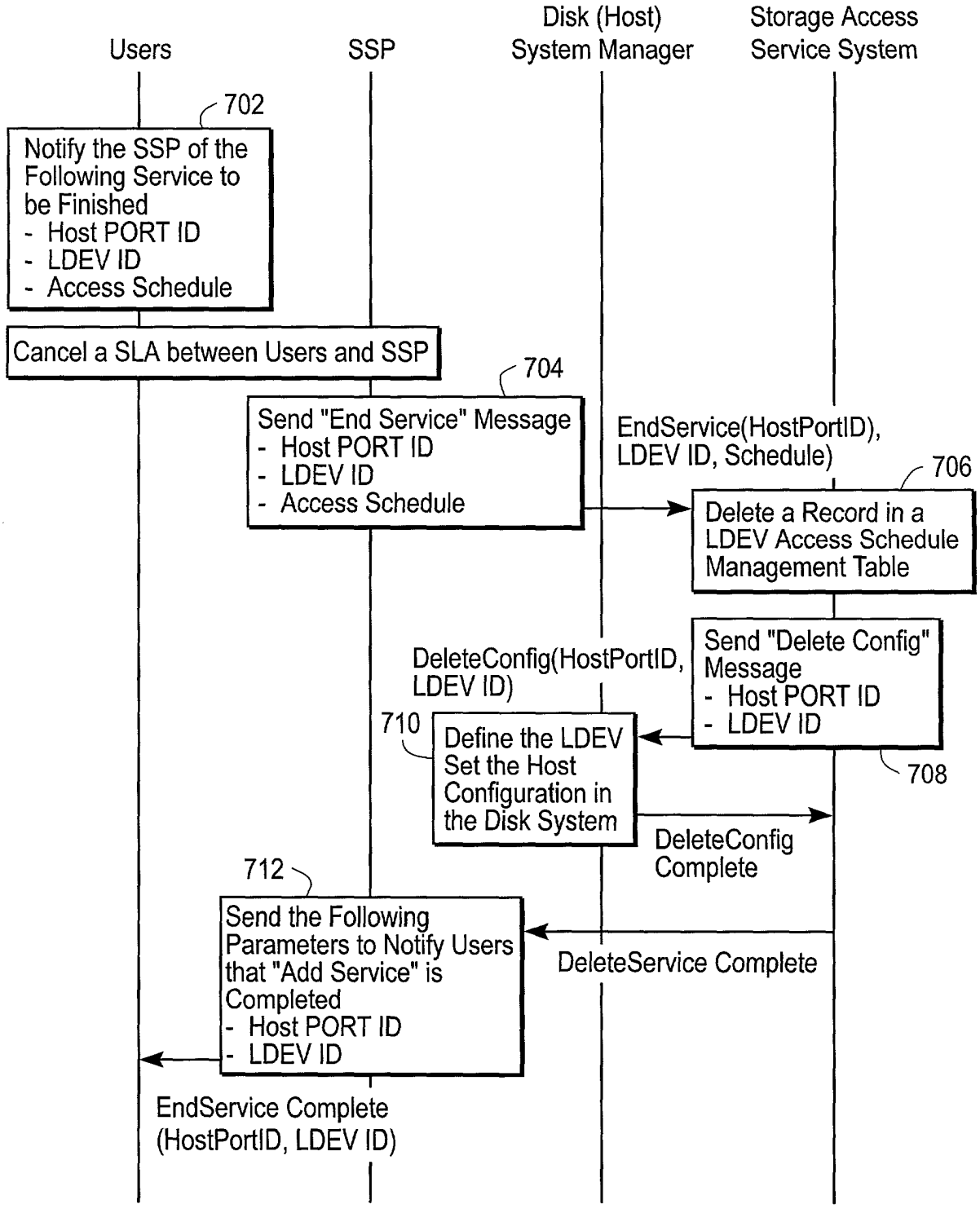

Users
SSP
Disk (Host) System Manager
Storage Access Service System
604
Define the Following Service Parameters
- Host PORT ID
- Storage Capacity
- Access Schedule
- Host Configuration
Brings Up the Service Description
- Price List Table
602
Make a SLA between Users and SSP
606
Send "Add Service" Message
- Host PORT ID
- Storage Capacity
- Access Schedule
- Time Zone in the User Site
- Host Configuration
AddService(HostPortID), Capacity, Schedule, TimeZone, HostConfig)
608
Add a Record in a LDEV Access Schedule Management Table
Send "Add Config" Message
- Host PORT ID
- Storage Capacity
- Host Configuration
610
AddConfig(HostPortID, Capacity, HostConfig)
612
Define the LDEV Set the Host Configuration in the Disk System
AddConfig Complete(LDEV ID)
614
Send the Following Parameters to Notify Users that "Add Service" is Completed
- Host PORT ID
- LDEV ID
AddService Complete(LDEV ID)
AddService Complete(HostPortID, LDEV ID)
"Start Service" Procedure

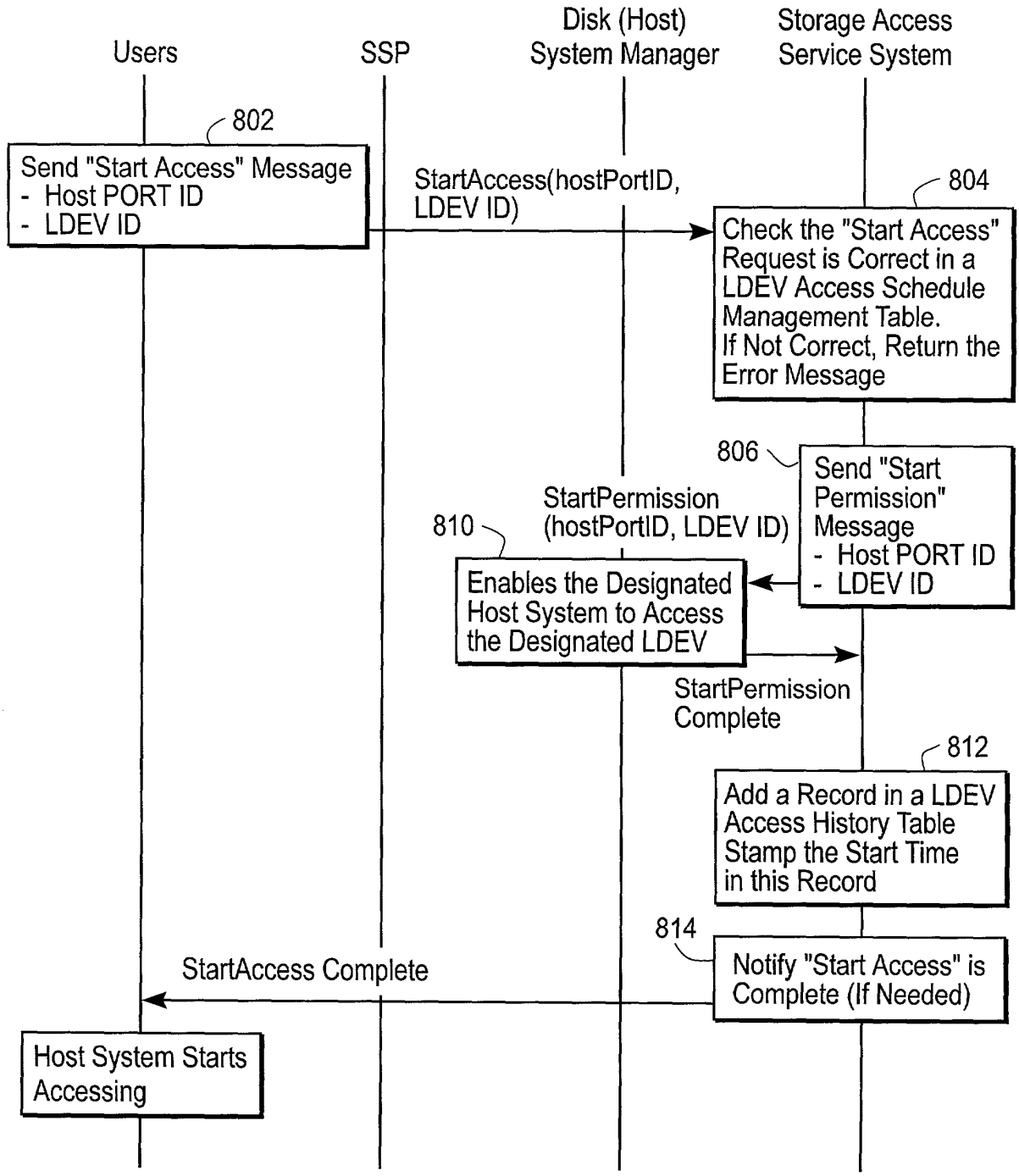
FIG. 6



"End Service" Procedure

FIG. 7

US 6,654,830 B1



"Start Access" Procedure

FIG. 8

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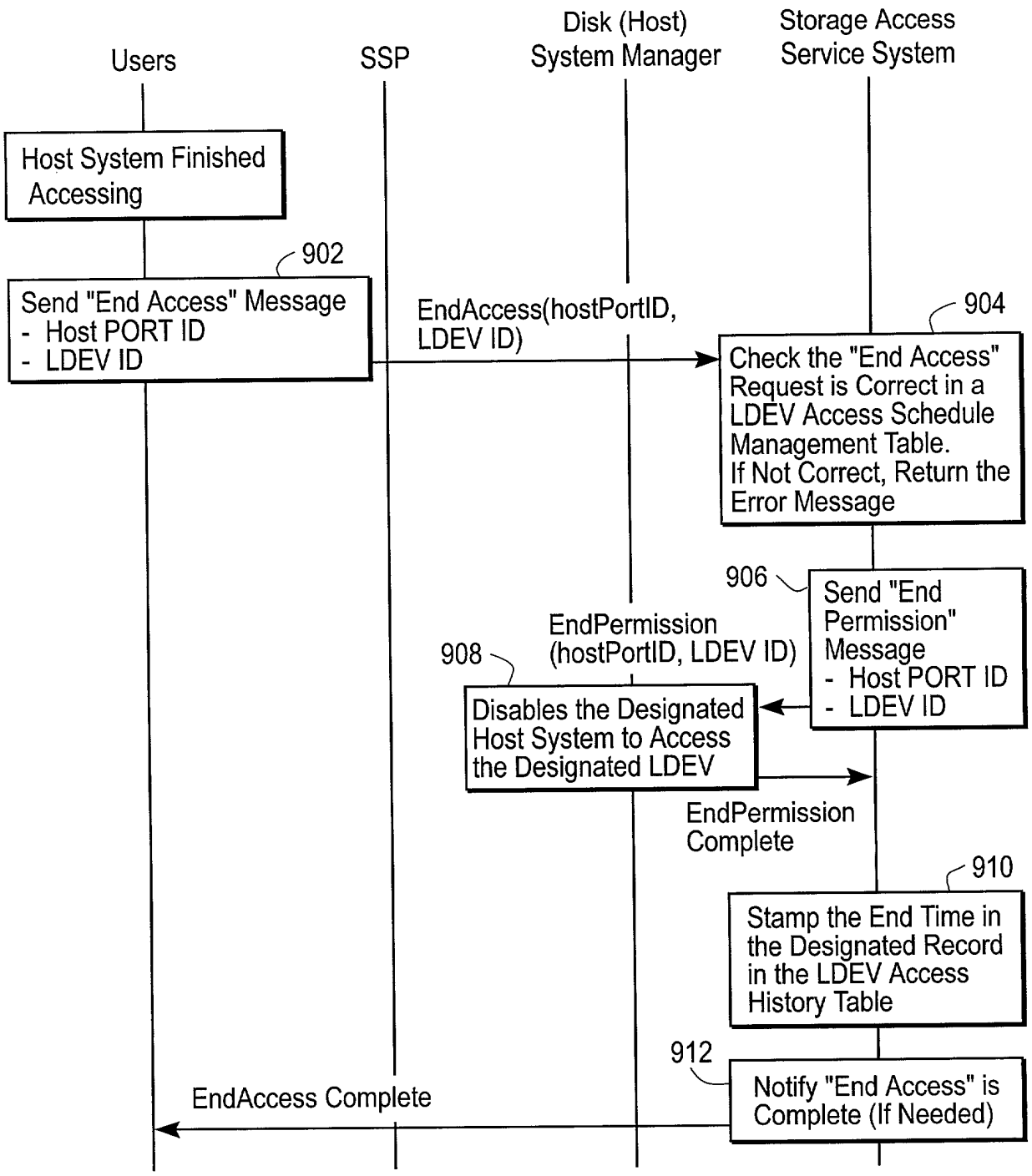
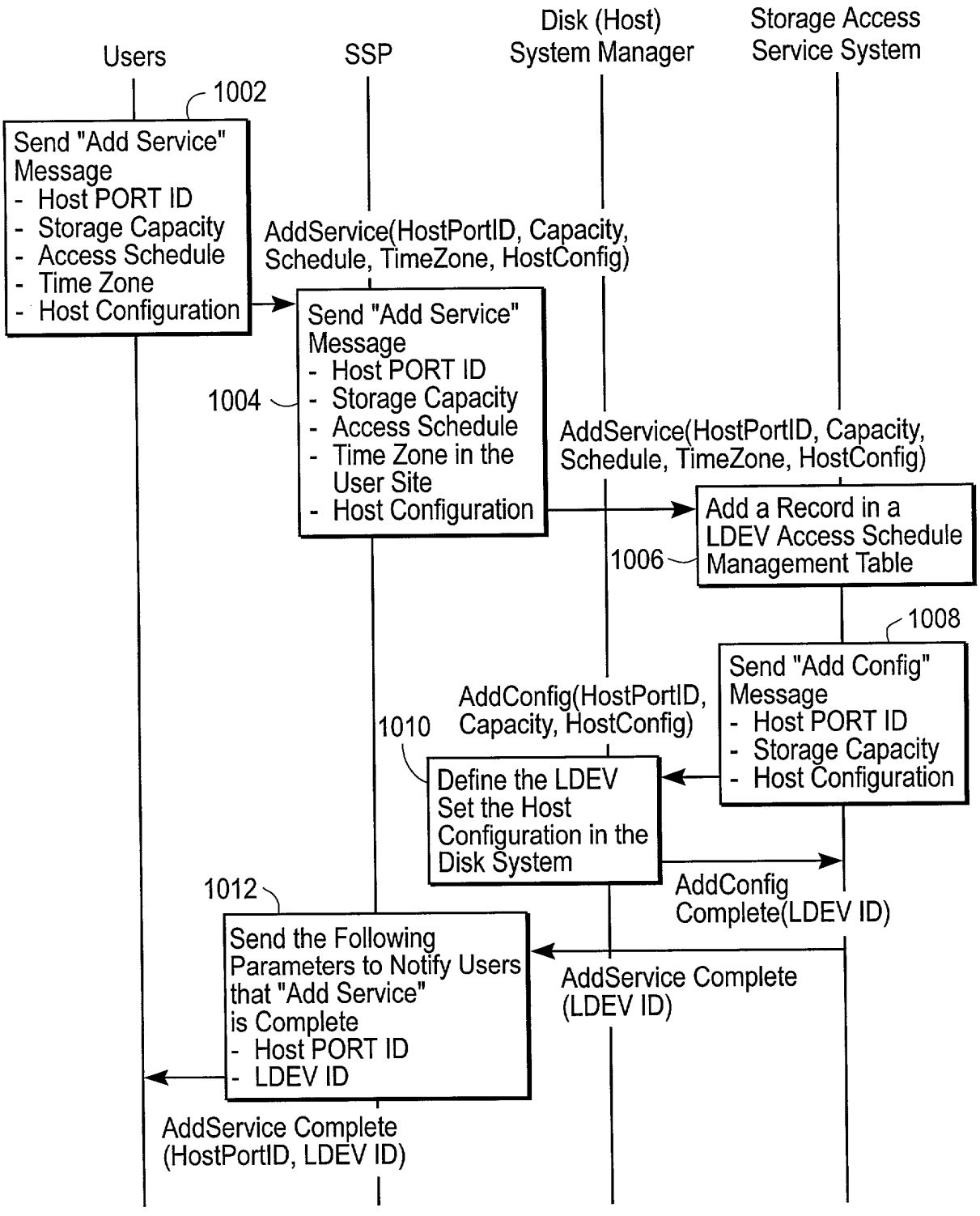


"End Access" Procedure

FIG. 9

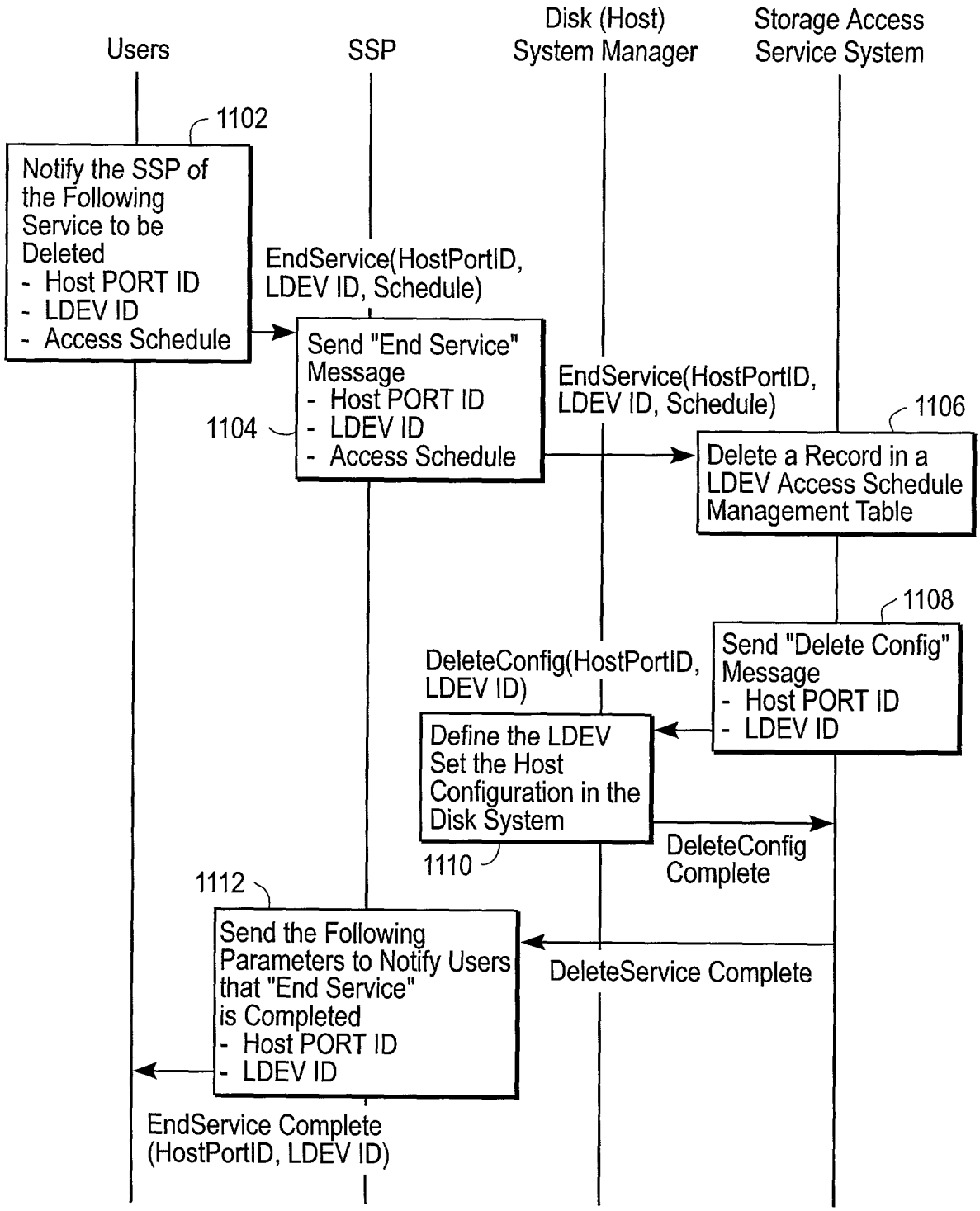
09814423-052504



"Add Service" Procedure

FIG. 10

US 6,954,852 B2



"Delete Service" Procedure

FIG. 11

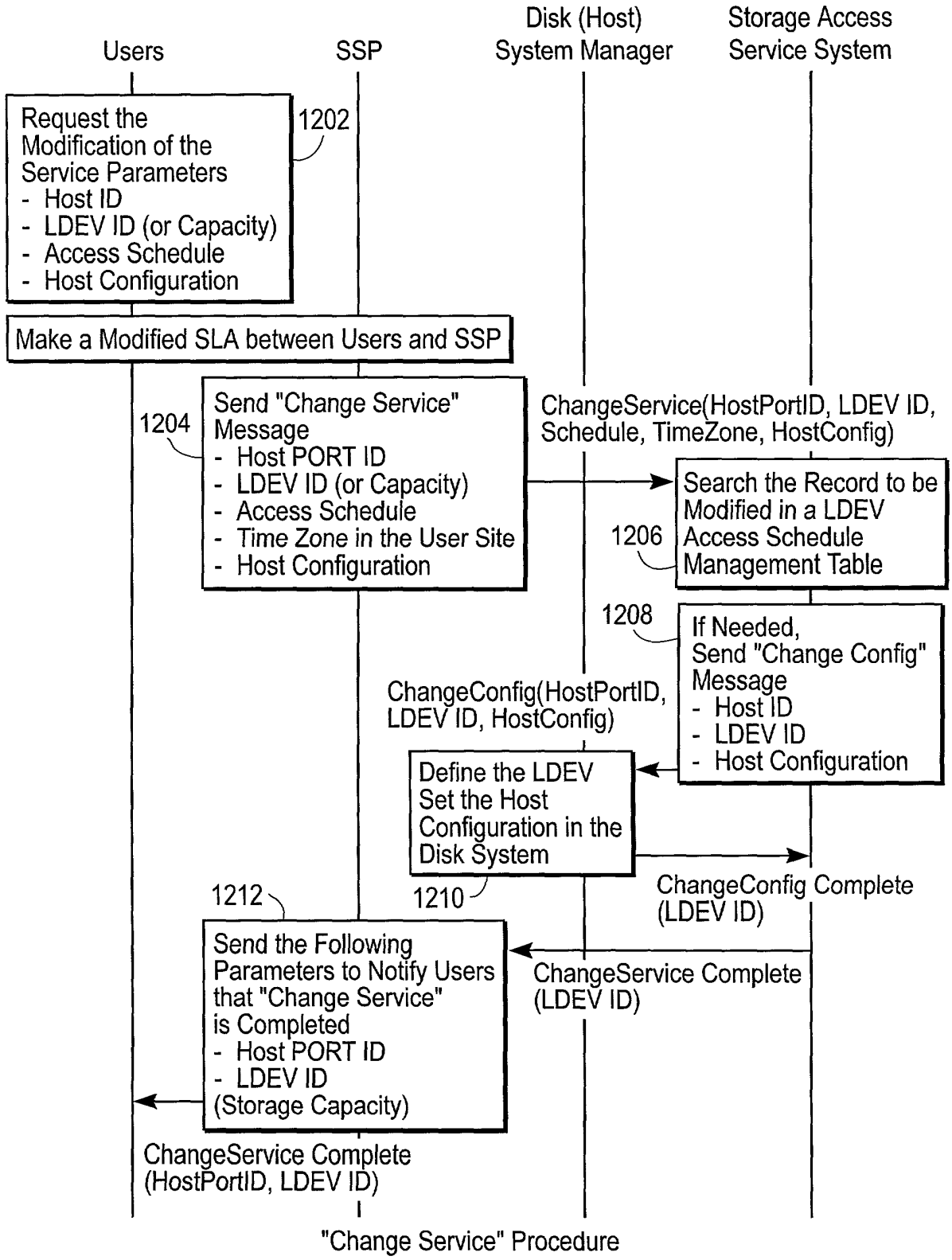
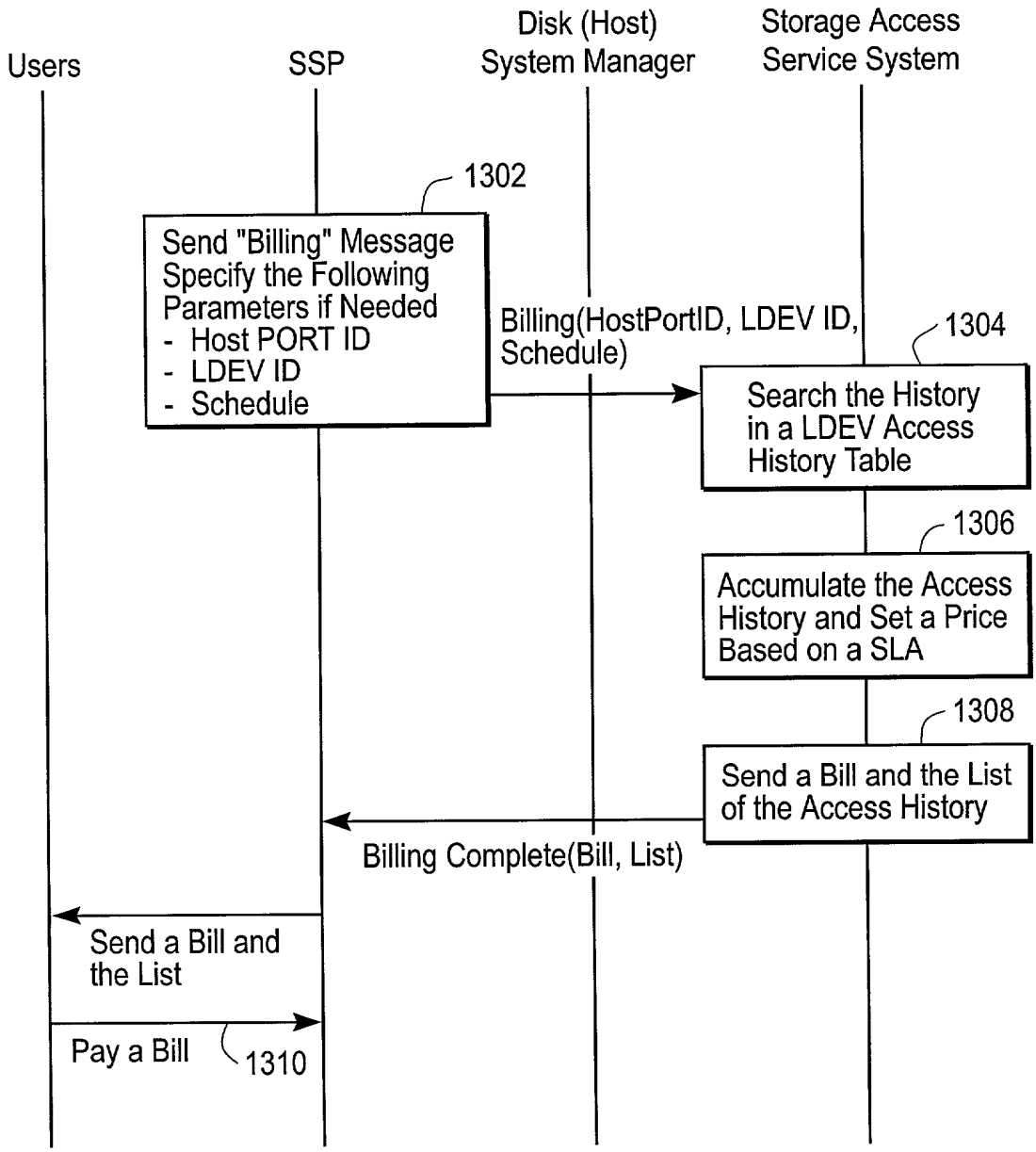


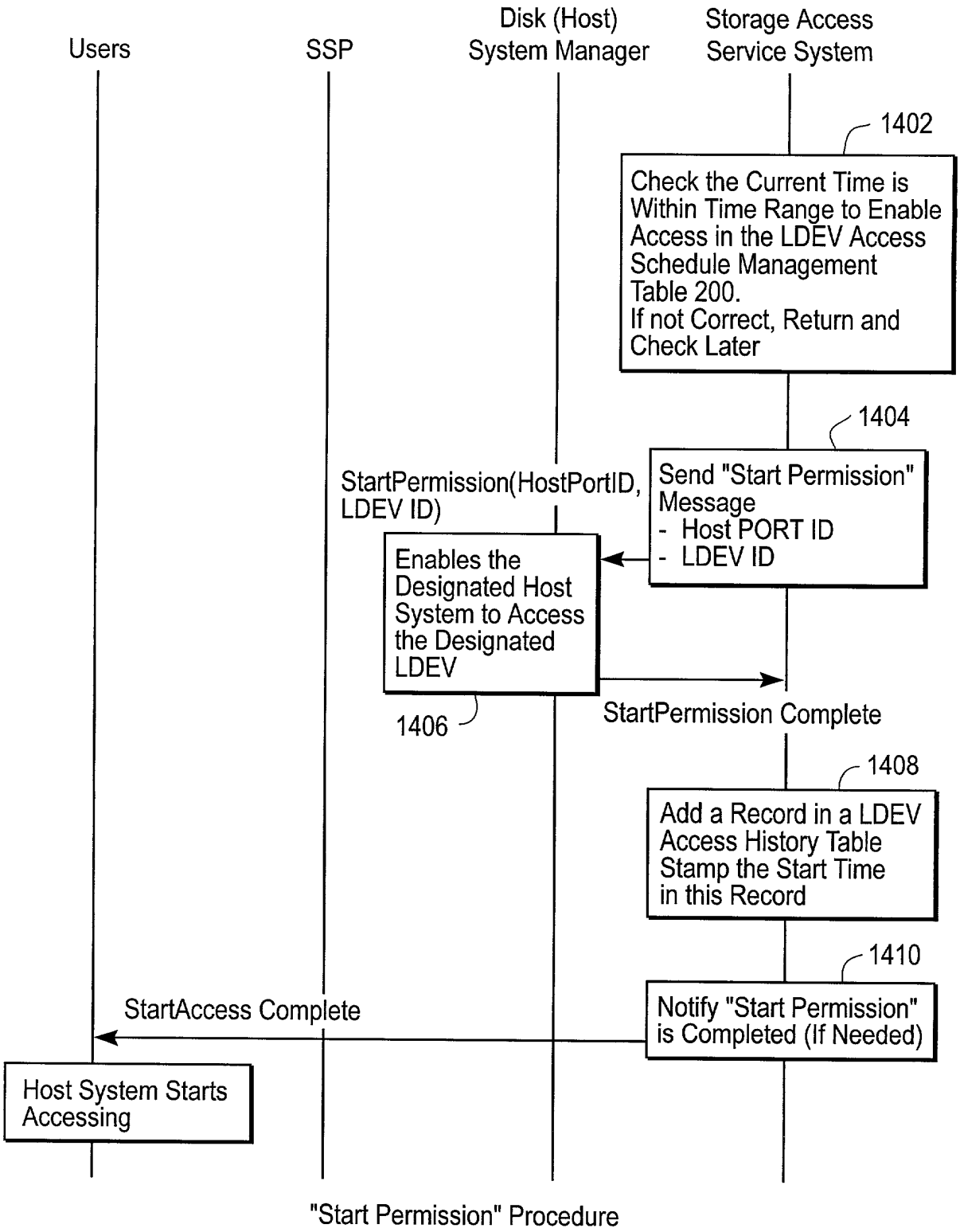
FIG. 12

US 6,842,784 B1



"Billing" Procedure

FIG. 13



"Start Permission" Procedure

FIG. 14

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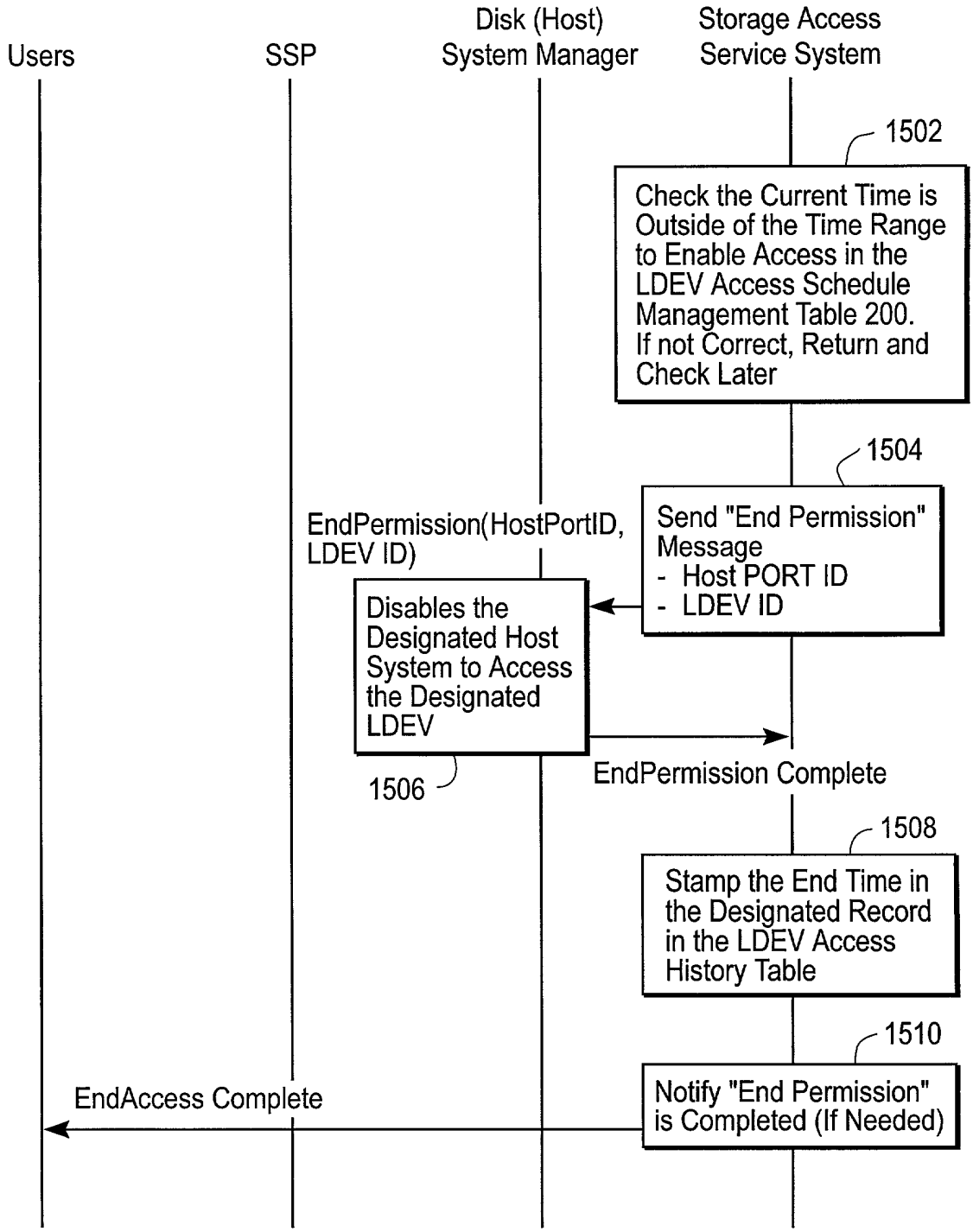
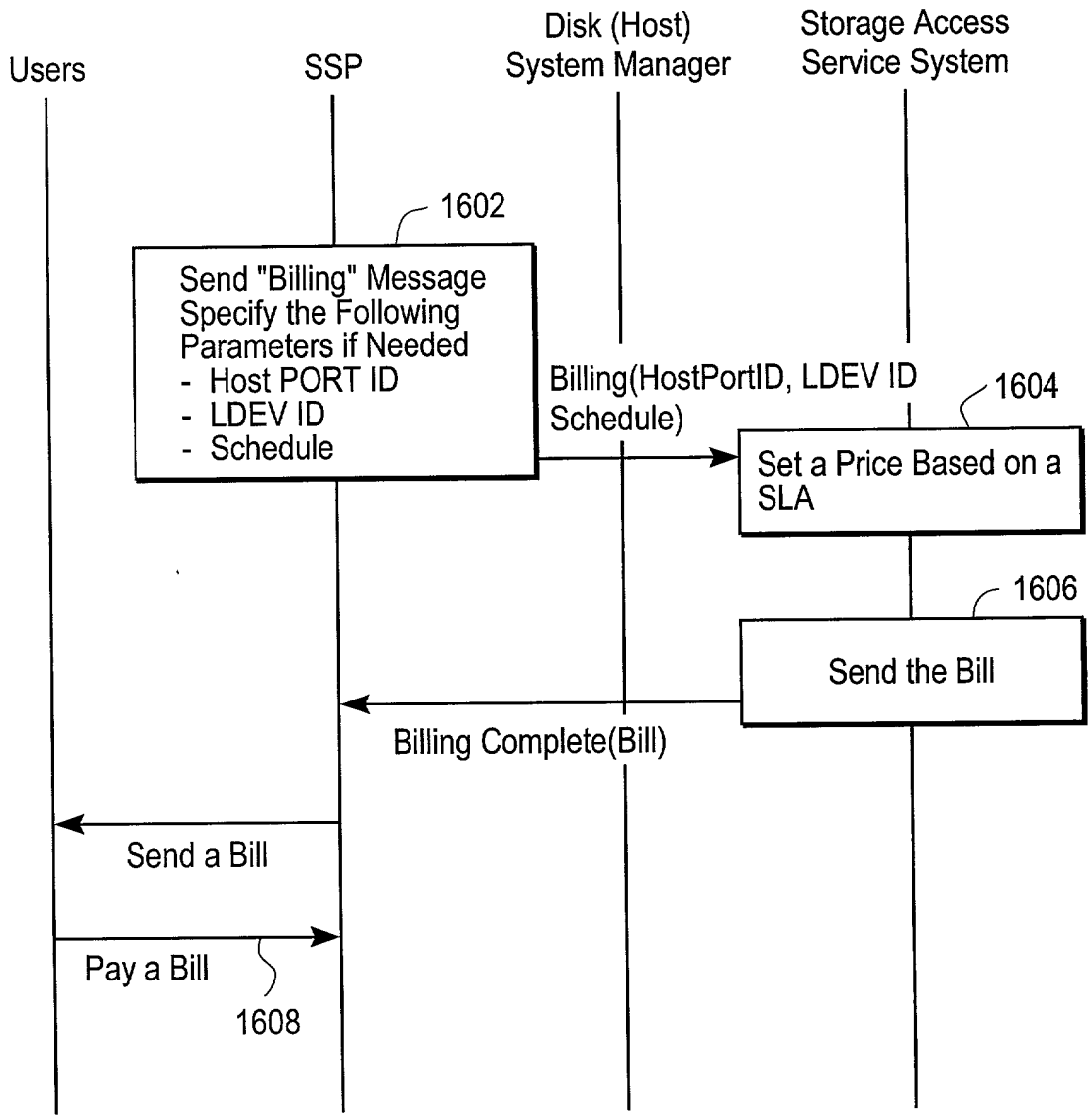


"End Permission" Procedure

FIG. 15



"Fixed Billing" Procedure

FIG. 16